Kennedy Space Center

Information Technology and Communications Services Directorate

Software Standards and Technologies Reference Listing

KSC-UG-3360

Rev. E

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Revision History

Revision Number	Change Description	Date
Basic	Initial release	07-29-2011
A	Annual Revision to update software versions and supported technologies. The revision appendix was also removed.	10-04-2012
B	Annual Revision to update software versions and supported technologies.	05-21-2014
C	Annual Revision to update software versions and supported technologies.	01-20-2016
D	Annual Revision to update software versions and supported technologies.	10-01-2019
E	Annual Revision to update software versions and supported technologies.	12-01-2020

References

Document Number	Title	Revision Date
NASA-STD-2804	Minimum Interoperability Software Suite https://standards.nasa.gov/standard/nasa/nasa-std-2804	8/30/2019

Table of Contents

1. Overview

The purpose of this document is to provide a detailed listing of software application development and server hosting technologies provided by the NASA KSC Information Technology and Communications Services Directorate (hereafter referred to as the "Institution"). The goals of documenting these standards include:

∗ Standardization of application development and hosting platforms, technologies and services

∗ Ability to provide best-in-class application development and hosting technologies

∗ Identifying Institutional-provided resources and services and setting customer expectations that can be used during the decision making process for their development efforts so that there is clear understanding as to what the Institution will support

∗ Provide for the planning of required skill sets within the Institution

∗ Reduction and potential elimination of duplicate services

∗ Driving cost-effective development practices and lowering lifecycle support costs

∗ Ability to provide more rapid response to requests for new application development, maintenance, and hosting

∗ Increased interoperability and supportability among applications in the Institutional portfolio

The standards listed in this document apply to application development and hosting services provided by the Institution. While external organizations are highly encouraged to adopt a similar posture, they are not restricted from adopting technologies not supported by the Institution. However if the intent is for the Institution to maintain applications developed by external organizations the standards in this document are required.

Customers requiring application development or hosting services should submit an IT Work Request at https://itrequest.ksc.nasa.gov. The request will be evaluated to determine the feasibility and costs of providing the requested service. Scoping and costs will be provided to the customer for their evaluation. Should the requested service fall outside the scope outlined in this document, the technology/service will be evaluated to determine whether it should be added to the standards document or one that will be dedicated to the customer. Funding for all hosting and software development/sustaining will be customer-provided with exceptions determined on a per-case basis.

This document is a snapshot in time and will continually evolve as technologies are introduced, retired, or undergo significant change. These standards will be reviewed and updated annually, and a new document version will be released at the beginning of the calendar year. In addition, a mid-year, minor version update will be published, if warranted.

2. Terminology

The following terms and symbols are used throughout sections three through nine and are defined below.

Supported (✓): The platform, framework, language, or tool is currently maintained until the projected retirement date.

Special OS Support (+): The platform, framework, language, or tool is currently maintained until the projected retirement date. License and implementation labor will be provided with additional funding unless upgrades are required to comply with IT Security and End of Life Requirements of the KIAC contract.

Unsupported/Legacy (X): The platform, framework, language, or tool is no longer supported. This could be due to one of many factors, including obsolescence, near-term product end-of-life, security issues, limited adoption, etc. It is possible for a technology to be supported for hosting while no longer supported for new development and/or maintenance.

Specialized: The platform, framework, language, or tool is unsupported for general use. However, limited support may be provided in the following instances: 1) A customer has requested, and paid for, a functionality that cannot be provided by existing standards; 2) A typically unsupported component is embedded in a currently-supported application.

Emergent: The platform, framework, language, or tool is currently undergoing evaluation for inclusion in the Software Standards and Technologies Reference Listing

Retired: The platform, framework, language, or tool has reached End of Life (EoL) and has been retired as of the date listed in the applicable chart, and is no longer offered for development, maintenance or hosting. Exceptions to support of retired products will be rare, and will typically require customer funding.

Retiring: Support will continue for all platforms, frameworks, languages, and tools until the EoL date specified in the tables found in sections 3 through 7. The purpose for the phase "Retiring" is to specify which items will be retired on the EoL date and must be supported up to that EoL date.

Future: The platform, framework, language, or tool will be supported for a minimum of one year. A projected retirement date of less than one year will be explicitly specified.

Hosting: Hosting can be one of the following states: Supported (✓), Unsupported (**X**), Specialized, Emergent, or Retired, as previously defined.

New Development: Refers to new applications developed by either IT or external customers.

Sustainment: Refers to applications maintained by IT. Applications may be transitioned to IT for maintenance provided the technology for hosting and/or maintenance is listed as currently supported.

GL (Government License): The Government will provide the licenses and hosting environment needed.

3. Hosting Platforms

Service/Product Type	Manufacturer	Product	Version	Hosting
Operating Systems	Microsoft	Windows Server	2008 R2	Retiring 01/14/2020
			2012 R2	Retiring 10/10/2023
			2016	+
			2019	+
	Red Hat	Enterprise Linux	6.x	Retired
			7.x	✔
			8.x	✔
Web Services	Microsoft	Internet Information Services	7.5	Retiring 01-14-2020
			8.x	✔
			10.x	✔
	Apache	HTTP Server	2.X	✔
		Tomcat	7.x	✔
			8.x	✔
			9.x	✔
Video Streaming Services	WOWZA	Wowza Streaming Engine	4.x	✔

4. Application Development and Hosting

Service/Product Type	Manufacturer	Product	Version	New Development	Sustainment	Hosting	New Development Ends
Application Development and Hosting Runtime Environment	Open Standard	HTML	5 and Prior	✓	✓	✓	Future
		Cascading Style Sheets (CSS)	3 and Prior	✓	✓	✓	Future
	Microsoft	ASP.NET / .NET Framework	3.x	X	✓	✓	Retired 12-31-2012
			4.5.1 and below	X	✓	✓	Retired 1/12/2016
			4.5.2	✓	✓	✓	Future
			4.7.x	✓	✓	✓	Future
			5.x	Emergent	Emergent	Emergent	Future
		Access	All Versions	X	Specialized	Specialized	Retired 12-31-2010
	Adobe	Cold Fusion	9.x	X	✓	✓	Retired 12-31-2011
			11.x	X	Specialized	Specialized	Future
	Open Source	PHP	5.x	Specialized	Specialized	Specialized	Retired 01-19-2017
			7.x	✓	✓	✓	Future
		Java Standard	7.x	X	Specialized	Specialized	Retired 04-01-2015
			8.x	Specialized	Specialized	Specialized	Future
			9.x	Specialized	Specialized	Specialized	Future
		Java Enterprise	7.x	Specialized	Specialized	Specialized	Future
			8.x	Specialized	Specialized	Specialized	Future
		JBoss	6.x	Specialized	Specialized	Specialized	Future
	Microsoft	Silverlight	3.x	X	X	Specialized	Retired 12-31-2011
			4.x	X	X	Specialized	Retired 12-31-2012
			5.x	X	X	Specialized	Retiring 10-12-21

	Open Source	Rails(Ruby)	3.x	X	X	Specialized	Retired 12-31-13
			4.X	Specialized	Specialized	Specialized	Future
			5.x	✓	✓	✓	Future
Database Management System	Microsoft	Access	All Versions	X	Specialized	Specialized	Retired 12-31-2010
		SQL Server	2008 R2	X	X	X	Retiring 07-09-2019
			2012	X	✓	X	N/A
			2014	✓	✓	✓	Future
			2016	✓	✓	✓	Future
			2017	✓	✓	✓	Future
			2019	Emergent	Emergent	Emergent	Future
	Oracle	Database Server	11g	X	✓	✓	Retired
			12c	✓	✓	✓	Future
	Open Source	MySQL	5.6.x	X	Specialized	Specialized	N/A
			5.7.x	X	Specialized	Specialized	N/A
		PostgreSQL	9.x	X	Specialized	Specialized	9/2021
			10.x	X	Specialized	Specialized	10/2022
		MongoDB	3.x	Specialized	Specialized	Specialized	Future
Collaboration	Microsoft	SharePoint	2013	X	✓	✓	Future
			2016	✓	✓	✓	Future
			2019	Emergent	Emergent	Emergent	Future
	Atlassian	JIRA	7.x	N/A	✓	✓	N/A
		Agile	7.x	N/A	✓	✓	N/A
		Bamboo	6.x	N/A	✓	✓	N/A
		Crucible	4.x	N/A	✓	✓	N/A
		Confluence	6.x	N/A	✓	✓	N/A
		FishEye	4.x	N/A	✓	✓	N/A
		Stash(Bitbucket)	5.x	N/A	✓	✓	N/A
	WSO2	API Manager	2.x	✓	✓	✓	Future
	Sitecore	Sitecore CMS	7.x	X	✓	✓	Retired
			8.x	✓	✓	✓	Future
			9.x	✓	✓	✓	Future

Reporting Services	Microsoft	SQL Reporting Services	2008	X	✓	✓	Retiring 07-09-2019
			2014	✓	✓	✓	Future
			2016	✓	✓	✓	Future
			2017	Emergent	Emergent	Emergent	Future
	Adobe	Cold Fusion	9.x	X	X	Specialized	Retired 12-31-2011
			11.x	X	X	Specialized	Future
	Actuate	BIRT	3.7.1	Specialized	Specialized	Specialized	Future
	Oracle	Hyperion	11.X	X	X	X	Retired 7/25/2019
Analysis Services	Microsoft	SQL Server Analysis Services	2008	X	X	✓	Retiring 07-09-2019
			2014	✓	✓	✓	Future
			2016	✓	✓	✓	Future
			2017	Emergent	Emergent	Emergent	Future
Integration Services	Microsoft	SQL Server Integration Services	2008	X	✓	✓	Retiring 07-09-2019
			2014	✓	✓	✓	Future
			2016	✓	✓	✓	Future
			2017	Emergent	Emergent	Emergent	Future
Revision Management	Apache	Subversion	1.x	✓	✓	✓	Future
	Git	Git	2.X	✓	✓	✓	Future
Enterprise Asset Management	IBM	Maximo	7.x	✓	✓	✓	N/A

5. Application Development Languages

Manufacturer	Language	New Development	Sustainment	New Development Ends
Adobe	ActionScript	Specialized	✓	Future
	Cold Fusion	X	✓	Retired 12-31-2011
	MXML	Specialized	✓	Future
Microsoft	C#	✓	✓	Future
	F#	Specialized	Specialized	Future
	Visual Basic	X	✓	Retired 12-31-2011
Oracle	Java	Specialized	✓	Future
RedHat	OpenJDK	✓	✓	Future
Open Source	PHP 7	✓	✓	Future
	Ruby 2.5, 2.6, 2.7	✓	✓	Future
	Iron Ruby (.Net)	Specialized	Specialized	Future
Open Standard	HTML 5	✓	✓	Future
	CSS	✓	✓	Future
Various	C	Specialized	Specialized	Future
	C++	Specialized	Specialized	Future
	JavaScript	✓	✓	Future
	Perl	Specialized	Specialized	Future
	Python	Specialized	Specialized	Future
Google	Angular 1.x, 2, 5, 7	X	✓	Retired
	Angular 9.x	✓	✓	Future

6. Desktop Development Tools

Manufacturer	Product	Version	Description	New Development	New Development Ends
Adobe	Flex	4.x	SDK for development and deployment of cross-platform rich Internet applications based on Adobe Flash	Specialized	Future
Balsamiq	Mockups	3.x	Mockup Tool for creating wireframes	✓	Future
CA Technologies	ERWin	8.x	CASE tool for database architecture, development, and maintenance.	✓	Future
		9.x		✓	Future
ESRI	ArcGIS Desktop	10.x	Spatial analysis, modeling, and simulation	✓	Future
ImageMagick Studio LLC	ImageMagick Image Manipulation tool	7.x	Image manipulation tool for web applications	✓	Future
Microsoft	OLEDB	2012	Provides for uniform access to a variety of data types	Specialized	Future
	Visual Studio	2012	Provides software development tools for .NET development	✓	Future
		2013		✓	Future
		2015		✓	Future
		2017		✓	Future
		2019		✓	Future
	Visual Studio Code	1.x	High functionality text editor for .NET and NodeJs development	✓	Future
Apple	Xcode	9.x	Development environment for iOS	✓	Future
		10.x		✓	Future
		11.x		✓	Future
Open Source	JDBC	4.x	Standard for database-independent connectivity between Java applications and a variety of database management systems	✓	Future
	Notepad++	7.x	High functionality text editor	✓	Future

Manufacturer	Product	Version	Description	New Development	New Development Ends
	WinMerge	2.X	Differencing and merging tool	✓	Future
Power Mapper	SortSite	5.X	Web Accessibility Compliance Tool	✓	Future
Total Validator	Total Validator Pro	11.4	Web Accessibility Compliance Tool	✓	Future
Redgate	SQL Toolbelt	N/A	Compilation of several SQL database tools	✓	Future
Scooter Software	Beyond Compare	4.x	Differencing and merging tool	✓	Future
Rapid7	AppSpider	7.x	Dynamic Application Security Testing	✓	Future

7. Mobile Technologies

Platforms

Platform	New Development	Sustainment	New Development Ends	Sustainment Ends
Android	✓	✓	Future	Future
iPhone	✓	✓	Future	Future
BlackBerry	Specialized	Specialized	Future	Future
Windows	Specialized	Specialized	Future	Future

Native Platform Languages

Platform	New Development	Sustainment	New Development Ends	Sustainment Ends
Objective C	✓	✓	Future	Future
Java	✓	✓	Future	Future
Swift	✓	✓	Future	Future

Mobile Web Application Languages

Language	Version	New Development	Sustainment	New Development Ends	Sustainment Ends
HTML	5	✓	✓	Future	Future
Cascading Style Sheets	3	✓	✓	Future	Future

Platform Tools

Tool	New Development	Sustainment	New Development Ends	Sustainment Ends
Adobe Flashbuilder	Specialized	✓	Future	Future
Cordova (PhoneGap)	Emergent	Emergent	Future	Future
Unity	Specialized	✓	Future	Future
Ionic	Specialized	✓	Future	Future